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150 pages with sixteen plates, and shows that a large amount of work has been done. The entomological department has a special annual appropriation of \$5,000 which enables it to carry on extensive field experiments.

In the December, 1895, Bulletin of the Tennessee Station, Chas. E. Chambers discusses the Chinch Bug.

Mr. Frank Benton's admirable Manual of Instruction in Apiculture, issued as Bulletin No. 1, New Series of the United States Division of Entomology, is being most cordially welcomed by the bee keeping fraternity.

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## EMBRYOLOGY.<sup>1</sup>

**Morphology of the Tardigrades.**<sup>2</sup>—R. v. Erlanger has published the results of his observations on the early development of *Macrobiotus macronyx* Dujardin. The division of the egg is total and equal, segmentation resulting in the formation of a long oval blastula with the segmentation cavity located nearer the posterior, more pointed pole. Regular gastrulation takes place, with the cells of both ectoderm and entoderm at the anterior more flattened, pole considerably larger than those posterior to the blastopore, this difference being noticable throughout the entire development. The embryo bends ventrally and the entoderm becomes constricted into two sections, the anterior, the germ of the œsophagus together with the sucking stomach and the posterior, the germ of the true stomach. The ectodermal cells of the anterior and ventral walls increase in number and size, representing respectively the starting points of the eyes and ventral nerve chain. The hind gut, extending dorso-ventrally, represents the third division and is in open communication with the blastopore. In the ensuing stage the blastopore becomes closed and later the true anus breaks through in the same place.

Up to this stage the embryo has consisted of but the two primary germ layers. The mesoderm develops as paired coelomic pouches from the Archenteron, the first pair appearing at the posterior end of the embryo forming the fourth segment, the second pair in the anterior end giving rise to the first segment, the third pair in the second segment

<sup>1</sup> Edited by E. A. Andrews, Baltimore, Md., to whom abstracts reviews and preliminary notes may be sent.

<sup>2</sup> Morph. Jahrbuch., Bd., XXII, 1895.

and the fourth pair in the third segment. In addition to these the first pair of mesodermal pouches, right and left of the first pair of appendages divide and give rise to a pair of head pouches. The gonad develops as a dorsal evagination of the archenteron between the second and third segments and later pushes itself forward into the region of the second segment.

There develops further, in the region between the stomach and midgut an unpaired accessory sexual gland and at the same stage there is developed a larger pair of evaginations of the midgut which the author designates as the midgut glands. The salivary glands develop as ectodermal invaginations of the head segment. The author does not consider the musculature, the nerves, or the transformation of the coelomic pouches, reserving those points for another paper.

After a careful consideration of historical and comparative points, in which he discusses the results and views of the various authors who have published papers on the tardigrades and presents his own ideas on the questions concerned, the author, in closing, hopes that what he has contributed to a knowledge of the morphology of the tardigrades will be sufficient to give them a place at the bottom of the arthropod stem. He does not maintain that the tardigrades represent the stem form of the arthropods but that they have branched off early and at the very bottom of the arthropod phylum and in many respects developed partially, but a considerable number of primitive characters remain which seem to show that they are transitional forms to other phyla.

In a second paper by the same author<sup>3</sup> the earlier embryonic stages of *Macrobiotus macronyx* Duj. are described as follows.

Contrary to condition found in the terrestrial tardigrades, in the species studied, the males are equal to the females in number. The males are smaller by half than the females, the latter appearing brownish-yellow in color owing to the eggs in the ovary which in a ripe condition attains a considerable size. The author was unable to distinguish a copulatory apparatus as described by Graff and the manner of fertilization precludes the existence of such an organ. The female withdraws her body into the chitinous envelope so that the hinder part is clear as far as the second pair of appendages and the eggs are extruded into this cavity through the anus. The hinder end of the chitinous shell of the female is turned in for a short distance, forming a short tube.

During copulation the female moves about dragging the male clinging to her back. The male deposits the spermatozoa near the posterior

<sup>3</sup> Biologisches Centralblatt., 15.

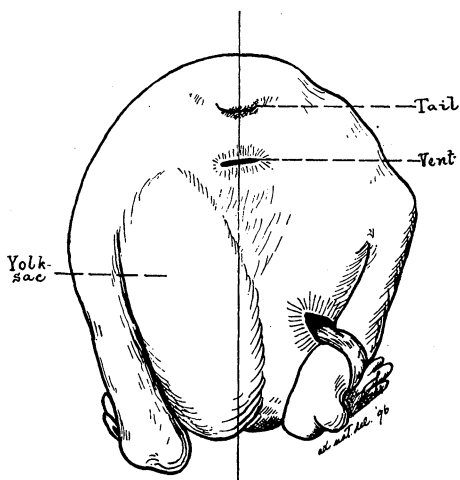
end of the female and they are sucked in through the tube at the posterior end of the female by a sort of pumping motion maintained by some peculiar muscular action on the part of the female.

The maturation stages viewed externally and in section present the usual phenomena with one peculiarity, the formation of *four* polar globules instead of three, the second globule extruded dividing in the same manner as the first, thus giving rise to the additional body.

The first division of the egg presents a two cell stage, the second division, a three cell stage, the third division a four cell stage followed by the eight, sixteen and thirty-two cell stages. In the four cell stage only two of the four cells are in contact, the former being somewhat oblique to the long axis.

The egg membrane is a product of the egg itself, and probably derived from the alveolar layer. In the young the appendicular glands, opening through tubes between the claws are much larger than in the adult and consist in great part of the coelomic pouches. In contrast to the terrestrial tardigrades *Macrobiotus macronyx* does not revive after desiccation.—F. D. LAMBERT.

**An abnormal chick.**—In a brood of chicks there occurred one case in which there was an opening in the abdominal wall on the right side through which extended what seemed to be a loop of the intestine. The loop ligatured the tibio-tarsus just above the ankle joint.



Upon dissection, however, it appeared the loop was nothing more nor less than a region of the yolk sac constricted by twisting. The

(smaller) portion of the yolk—sac thus constricted off was darker and had begun to undergo decay. The opening in the abdominal wall is nearly oval, 9 mm. long by 7 mm. broad. The edges are smooth as if about a natural opening.

A glance at the accompanying figure will reveal a certain amount of asymmetry, due mostly to the position of the yolk sac.

The youngster was hatched alive. How long he might have lived, or whether the opening would have healed cannot be said, as the owner did not give it a chance.

In all probability the condition just described was caused by some inadvertent movement of the embryo, thus displacing the yolk sac or a part of it.—FRANCIS E. LLOYD.

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## PSYCHOLOGY.

### A Study in Morbid Psychology, with some Reflections.

—When Descartes uttered his famous aphorism, "*Cogito, ergo sum*," he reasonably flattered himself on having made an irrefutable proposition. But the "abysmal depths of personality" are not as easily sounded as the great French philosopher imagined. Certainly *something* thinks; but is it one consciousness or more that is represented in one human brain? The celebrated experiments of Professor Janet, of Havre, led to the discovery of no less than three distinct personalities in his patient, Madam B., and the no less noted cases of Félicité X. and of Louis V.<sup>1</sup> show one or more personalities controlling the same brain. And there are epileptiform and hypnotic states where all the functions of civilized society are discharged without the consciousness of the ordinary primary self.

I will now proceed to describe the case, which forms the main subject of this article—that of Ansel Bourne, a carpenter and itinerant preacher of Rhode Island. The experiences of Ansel Bourne are amongst the most curious to be met with in the annals of morbid psychology. Whether the symptoms of this case are due to epilepsy—"masked epilepsy"—or post-epileptic mental disturbance, they are equally worthy a study.

Ansel Bourne, who is of New England parentage, was born in New York City, July 8, 1826, and worked steadily at his trade as a carpen-

<sup>1</sup> NOTE.—See article "Double Consciousness," in the Dictionary of Psychological Medicine, edited by D. Hack Duke, M. D., where cases are given, including those of Louis V. and Félicité X. (cases 4 and 7).